

## Saturday

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## A BRIEF HISTORY OF NAVIGATION.

PART I.  
ON THE NAVIGATION OF THE ANCIENTS.

Rude as their ships was navigation then,  
No useful compass or meridian known:  
Coasting they kept the land within their ken,  
And knew no North but when the pole-star shone.

DRYDEN.



EGYPTIAN POTTERY-FLOAT.

## INTRODUCTION.

THE contemplative mind is supplied with matter for moral, and even sublime reflection, in viewing man in his more natural state, weak, savage, and untutored; clad in the skins of animals constituting his food, which are captured with toil and difficulty; inhabiting a rude hut, and confined within the narrow range of an island girt by the ocean, which to him is interminable; knowing no other land than that on which he dwells, and never daring to lose sight of that land, in the frail bark in which he moves along his native coast. Then if, by a rapid transition, we behold man civilized and highly cultivated as he now is, borne along by—

The heaven-conducted prow  
Of Navigation bold, that fearless braves  
The burning line, or dares the wintry pole,

we feel the force of the oft-repeated truism, that man is a progressive being. Thus, it will furnish instruction to the reader, if we endeavour to fill up the long interval between these two conditions, in which we find man acting his part as a member of the human family, by tracing the progress of Navigation from the rude raft, or ill-constructed canoe, through the various stages of addition and improvement, until we reach that triumphant monument of human skill,—a ship of the line\*. An improvement, so vast, is of course only one of the results of the advancement of nations in the scale of civilization; and this advancement is accurately tested by their collateral progress in literature, art, and science. As the first ministers to the reflecting tastes of its members, so the two latter supply their actual wants and increasing desires; and there have been found, at all times, persons ready to devote their energies to carry out those subjects, which a few fortunate and gifted individuals have invented, or improved. But the great bulk of mankind does not the less further the progress of civilization, though all do not invent nor improve: they serve as the power for carrying on the work, which is contrived and

begun by that limited number of great minds, on which Nature has poured down her choicer gifts.

While thus laborious crowds  
Ply the tough oar, Philosophy directs  
The ruling helm.

In the present and succeeding papers it is our purpose, therefore, to trace the progress of Navigation from its earliest principles and practice, to its present comparatively perfect condition; and in doing so, it will be found convenient to adopt the following arrangement, and treat—

- 1st. Of the Navigation of the Ancients.
- 2nd. Of the Navigation of the Middle Ages.
- 3rd. Of Modern Navigation.

The first division will comprehend, as to time, all the period between the creation of the world and the downfall of Rome; that is, a space of about 4500 years.

ON THE RUDIMENTS OF NAVIGATION, TO THE FORMATION  
OF THE BOAT.

WHEN speaking of Navigation in the earliest stages of the world, the idea of the ark, used by Noah and his family, will readily enter into the minds of our readers. But we cannot consider the formation and use of the ark, in the seventeenth century of the world, as a commencement or link in the chain of nautical invention. The entire direction and means for accomplishing this stupendous work, were afforded by God, to effect a saving purpose in the midst of the miraculous destruction of the human race; when the power and skill of man would have been, in those times at least, impotent to withstand or elude the watery havoc of Nature. In addition to this, we must notice the absence from the ark of any means, or of any necessity, for its occupants *navigating* it from one place to another; which is essentially necessary to make it belong to our present subject. No intention of this sort is alluded to; the ark being merely a vast shelter rendered capable of floating on the water. For these two reasons, therefore, we conclude against assigning to this event in the sacred history, a place in this treatise.

We come, then, to regard the ocean as a part of the arrangement of the Almighty power for His own wise purposes; as among the *creatures*, which have been committed to the use of man; beneficial in various ways, which it is not our province to consider here, but only as it serves the purpose of a great high-way for the nations of the world; pre-eminent among which, and may it ever be, is our own country. Our subject takes not in its view a supernatural state of the floods of the ocean, but that, wherein there is "set a bound that they may not pass over; that they turn not again to cover the earth\*." We contemn, therefore, the quailing lament of the heathen poet, Horace, who thus delivers himself:—

Jove has the realms of earth in vain  
Divided by the uninhabitable main,  
If ships profane, with fearless pride,  
Bound o'er the inviolable tide.

We see how ill-timed is this awe of the sea, when we remember as readers of the Inspired Volume, that it is written,—“They that go down to the sea in ships, that do business in great waters; These see the works of the Lord, and his wonders in the deep †:” and, when we call to mind, that, by means of ships, this Inspired Volume was brought to us, and has been carried out again to all parts of the habitable earth.

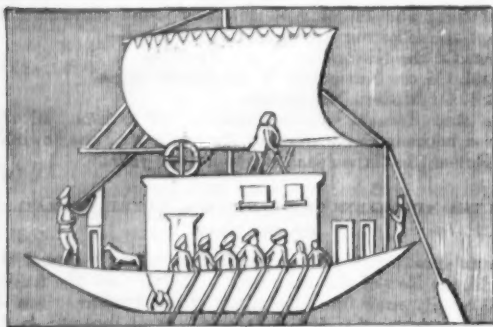
In the youthful condition of the world, and when all was new and untried, the innate love of exploring that which had not yet been seen, gradually extended the locality of the human race. Brooks, and such like streams, were soon forded, when new pastures, the impulse of hunting, and the

\* See *Saturday Magazine*, Vol. III., p. 36.

\* Psalm civ. 9.

† Psalm cvii. 23, 24.

desire of novelty, prompted a change; and a mode of crossing the deeper streams was soon suggested to the observation of the savage, whose condition seems, by the testimony of Homer, to have been at its lowest pitch, when in ignorance of any means whatever, for crossing the water, which, though seeming, at first sight, to bar intercourse, does, in reality, promote it. The buoyancy of wood in the water is the germ of all his subsequent proceedings. Accident shows him that wood invariably floats; and on the fallen trunk of a tree he ventures, beyond his own depth, away from the land. The trunk of a tree, hollowed out, for a more convenient position of the body, (an idea derived, we are told, from a split reed, seen floating on the water,) forms the canoe, which is usually found among the most uncivilized of the human species. From this rude beginning to the noble vessels of our day, how great the interval of time, how slow the pace of improvement, and how absolutely necessary, for any permanent and comprehensive effect, the application of elements, which seemed at one time out of the reach and cognizance of man.



ANCIENT PICTURE OF AN EGYPTIAN SHIP.

We seem to learn from contemplating the first materials of antiquity, that man derived, from the natural objects which surrounded him, a notion of the forms and fashions of things which conduce to his benefit. The pitcher-flower, (*Nepenthes distillatoria*),\* presented to him a graceful and convenient form for his cups and vases; the leaf-covered grottoes infused into him the idea of arranging his architectural principles on the patterns of nature; and the movements of the finny tribe developed the secret of directing his path on the water with nearly the same ease as on land; the trunk of the tree hollowed out, as a receptacle for the navigator, accords with the body of the fish; the forepart of this trunk, when sharpened off to an edge, in order to cleave the waters the more easily, is assimilated to the head of the animal, while the forcible motion of its tail shadows out the rudder, which, by its lateral movements, serves the purpose of steering the boat, as the tail of the animal directs the motion of the fish. This step in Navigation is completed by adopting a method for propelling the vessel onwards, which method is furnished by seeing the use of the fins of the fish in forming a passage through the waters. When oars, sculls, or paddles came into operation at the instance of Atlas, an ancient African monarch, the boat was essentially complete.

The foregoing illustration condenses into one view the various traditions, which have been handed down respecting the first decided step in Navigation; for it matters little from what other quarter,—the swan, or any other aquatic fowl,—the suggestion arises to the human mind, so it agree with the beauty of nature in its physical utility.

The raft, or floor of wood, formed by the lashing together of two or more planks, seems to have been an early, as it is one of the readiest modes for passing and conveying rough goods along upon the water. In time of shipwreck, or for any temporary purpose of transport, its facility of make recommends it, when other modes fail. Thus Hannibal used rafts for transporting his horses and elephants across the Rhone. The Egyptians, in very early times, used the raft on the Nile. An improved sort of raft was found in use among the Peruvians, tapered at the prow, in order to pass through the water more easily; the planks were fastened together with leather thongs, by the unnoticed decay of which the bark would oftentimes fall to pieces,

and its mariner and goods disappear under the waves. The celebrated timber-raft which floats down the Rhine to Dort, in the Netherlands, from the forests of Germany, is oftentimes 1000 feet long, and 80 or 90 feet wide, consisting of trees fastened together with iron spikes and cross-timber,—a floating island with a village at the top, and requiring nearly 500 labourers to manage it. When the raft is broken up and sold, it sometimes fetches a sum of £30,000. The same practice is used on the coast of Norway, thereby saving the trouble and expense of land-carriage.

On a board, or slight raft, the surf-swimmers of the Sandwich Islands, in the Pacific Ocean, pursue their pastime. They swim out to sea on this raft through a violent surf, plunging under every wave, and rising beyond it. In returning they are carried swiftly on the top of a large wave towards the shore, when they steer among the rocks, taking care not to lose their planks, for such a loss is deemed to be very disgraceful.

Somewhat superior in contrivance and effect is the construction of the pottery-floats of Egypt. Jars and various earthen vessels are made in great quantities in Upper Egypt; a large number of them are fastened together with cords and twigs into a triangular shape, having the mouths of the vessels upwards; they are then covered with bulrushes, and, being empty, are rowed as need may be, and steered down the Nile to Cairo, where the raft is taken apart and the articles are sold. Some remarks on these earthenware boats may be found in Vol. IX., p. 164, of this work.

It appears that, in very ancient times, a vessel was in use on the Nile, made from the planks of acanthus wood, so laid together as to lap over in the manner of tiling, and fastened with wooden pegs, the seams being tightened with leaves. It was also covered over with flags of the papyrus, and properly cemented, to keep out the water. In process of time an acanthus mast was added, to which was appended a sail, formed of papyrus leaves. This was the case in the infancy of Moses, and to such the prophet Isaiah alludes in the second verse of the 18th chapter of his book. In ascending the Nile the vessel was towed along; in its descent, it was steadied against the effects of the N. E. winds by a hurdle of wood let down from the prow.

By the term *canoe* is generally meant a single tree hollowed out boat-like, propelled onwards in the direction of the view of the Indian, who urges its course with paddles, which are worked perpendicularly in the water. The Macedonians, who saw the natives at the mouth of the Indus paddling in their canoes, thought they were digging the water with spades. Canoes are of various lengths, from 10 to 50 feet.

But the make and build of all the early naval structures depended simply upon the use they were put to, and the means at hand for their formation. We have from Herodotus the description of a vessel for conveying goods down the Euphrates to Babylon. A frame-work of willow was covered with skins, forming, when complete, a sort of large tub, which was managed by two men with long poles, without any regard to stem or stern. They were of various sizes, and carried an ass besides the merchandize; the animal was employed in conveying the vessel home by land when taken to pieces, as the downward force of the river's current prevented them from sailing up the stream. Major Rennel describes this vessel as being still in use in the lower parts of the river, under the name of *KUFAR*, or *round vessel*. Very similar to this is the *coracle*, consisting of a large basket, over which was stretched a horse's hide. This was found among the ancient Britons when the Romans invaded the island, and is still seen in use on the Severn, and among the people of South Wales. The American Indians use wooden-ribbed vessels, covered with skins, which vessels, owing to their lightness, can be carried overland, when it is necessary to avoid the rapids and waterfalls, which are numerous in the country. The Greenlanders' canoe is covered in at the top with a skin, so as to shut up the lower part of his body when he is sitting in the vessel; the water may thus be kept out in the roughest seas.

The double canoe of the Society Islands is an ingenious contrivance for affording a safe platform, whereon the warriors may wage battle. Two canoes being placed alongside of each other, at a certain distance apart, planks are firmly fixed across, which make a stage safe from capsizing. The whole is so contrived, that the rowers may work underneath this floor, while the soldiers engage in battle above.

\* See *Saturday Magazine*, Vol. II., p. 159.

The proas of the Ladrone Islands present another form of the canoe, the peculiar quality of which, we are told, is swiftness to the extent of 20 miles an hour; this results from their construction. The lee side, or that which is away from the wind, is straight, while the other is bowed out as usual. This causes both ends of the vessel to be narrow, and thereby exceedingly sharp, so that it pierces through the water the more readily, and needs no turning round when the voyager wishes to come back. In a rough sea they have a contrivance on the windward side of the proa called an out-rigger, (see Vol. III., p. 181, of this work,) to preserve a steady balance, and prevent its upsetting on the straight or lee side. The rapid motions of the sword-fish would seem to have suggested the idea of forming these *flying proas*.

The alder and poplar were used by the ancients for ship-building, as being hard and light woods, but oak and fir were chiefly sought after. The Greeks used chestnut and cedar, the latter of which they considered to be very durable. Cypress was valued for its not leaking, and elm was chiefly used for the parts of the vessel under water. Sometimes, in these days of nautical simplicity, a fleet of ships was formed within a month of the time when the timber spread out its leafy arms in the forest, haste, not skill, being used in their formation. When, however, time allowed, ship-timber was not always hastily felled, nor carelessly employed. The age of the moon, and the quarter from which the wind blew, were superstitiously heeded.

Tacitus describes the Swedish boats, seen by the navigators of his time, as being like the Northern yawls of the present day, which are peaked at both ends. These boats were, in all probability, used for piracy, which in a barbarous condition of society, is the mode of gradually establishing commerce. A galley, the prow of which resembled the weapon of the sword-fish, was used by the ancient Greeks, as also in more modern times, for cruising against the pirates of the Mediterranean, whose vessels were of a similar sort.

The materials with which the planks or other parts of these different vessels were put or fastened together, were various. Sometimes wooden pins were employed, and at other times they were connected together with thongs, made from the skins and sinews of animals; iron seldom, or never, coming within the reach of these primitive naval architects. The Icelanders and Esquimaux Indians were found to make their boats of long poles placed crosswise, tied together with whale-sinews, and covered with the skins of sea-dogs, sewed with sinews instead of thread. To stop leakage the ancients used lime and pounded shells, which being observed to waste away, pitch, resin, and wax were employed. Sometimes the crevices were first stopped up with flax, and then leather was employed for sheathing. We find sheet-lead used for the same purpose, and copper nails. For their tools they used flints and shells for cutting, while several of the bones of fishes served them to pierce, to saw, and to plane with. From these nature-suggested implements is derived, with improvements according to circumstances, a great portion of the tools with which the mechanic of modern days so skilfully performs his work.

We arrive now at the general term of *boat*, by which we understand a combination of every peculiar excellence afforded by each sort of water-conveyance mentioned before. The method of making and finishing off a boat is to be sought for in the science of Naval Architecture; but we may merely mention that, from the lightest and most substantial material, strongly compacted into the form which will attain most speed, and admit of most room and convenience for the rowers, whether they be one, two, or more, is produced the most finished specimen of the first and original class of naval structures.

#### THE SAIL.

ABOUT 1230 years before the Christian era, as far as we are able to discern actual fact through the hazy and fabulous record of profane antiquity, the adoption of *sails* promoted the nautical art beyond former conception, and served as an era in history by the simultaneous wonder and admiration with which the discovery, and the authors of it, were hailed by their fellow-men, whose knowledge and comfort were, in process of time, so much promoted thereby. The statements of the early writers of the world seem to concur in describing Dædalus of Athens, the most skilful mechanician of his day, as the individual who first pressed the wind into the naval service of man. His genius, sharpened by fear, when seeking to escape the vengeance of Minos, king of Crete, put up in his own boat, and in that of his son, a cloth, or cloths, to catch the passing gale, thus using its force to hasten on their frail barks. The singers and bards of the time, whose avocation was with the multitude, and whose recitations pleased in proportion to the quantity of the marvellous they contained, being themselves, from the very nature of their pursuits, easily led off from natural principles to the sublime and mysterious, chanted before those, whom rumour had already prepossessed, the flight of Dædalus and the unfortunate death of Icarus, his son. Dædalus, say they, had carefully fitted to his own body, and to that of his son, wings, constructed with feathers and wax. Thus equipped, they took their flight through the air over that part of the sea which lay between Crete and Italy. Icarus, with the rashness and unsteadiness of youth, sought a higher flight than his sire, and getting, in consequence, too near the neighbourhood of the sun, the waxen cement of his wings was loosened, which, thus becoming powerless, he dropped into and was drowned, in that part of the *Ægean Sea*, or Archipelago, which bore for ages after the appellation of the Icarian Sea. The point in this relation which we are chiefly interested in clearing up, is the youth's mismanagement of his wings. The fact of the passage of one of these persons from Crete to Italy, and the drowning of the other, is undisputed; also that they went over the water and not over the land. As we know that it is incompatible with the human frame to be buoyed up by wings in the air, and unnatural that greater heat should be experienced in rising above the surface of the earth, balloons being at that time out of the question, and being aware of the stretch and license which the rude and unreflective imagination can take, we see easily that Dædalus and Icarus, by cutting their way through the waters with sails swelled out by the wind, seemed to have flown over it with wings; and this the more veritably to those who regarded only, or chiefly, the novelty of the proceeding, and received their accounts from the echo of rumour. The vessel of Icarus then, who seems not to have had his sail sufficiently under control, was capsize, and thus, as truly said in the fable, "he dropped into the sea, and was drowned."

Many other voyages, under circumstances so novel for the times, have received the utmost embellishment of the poetic art. When we consider the surprise of ignorant people, at beholding floating castles with expanded wings, making their unassisted way over the sea, we discern easily whence arose the fiction of the flight of Perseus to the Gorgons, who, we are told by Aristophanes, was carried thither in a ship. The story of Triptolemus, who was feigned to ride about the world on a winged dragon, doing good to the human race, is easily understood, when we remember that he was employed by his countrymen to procure in a ship corn from foreign shores, for the supply of their necessities. The winged horse, Pegasus, was a ship of that name, fabled to have been the offspring of Neptune, the god of the sea. In a word, we thus account for the stories of griffins, or of ships transformed into fishes and birds, so frequently met with in the ancient poets.



ANCIENT ROWING-BOAT



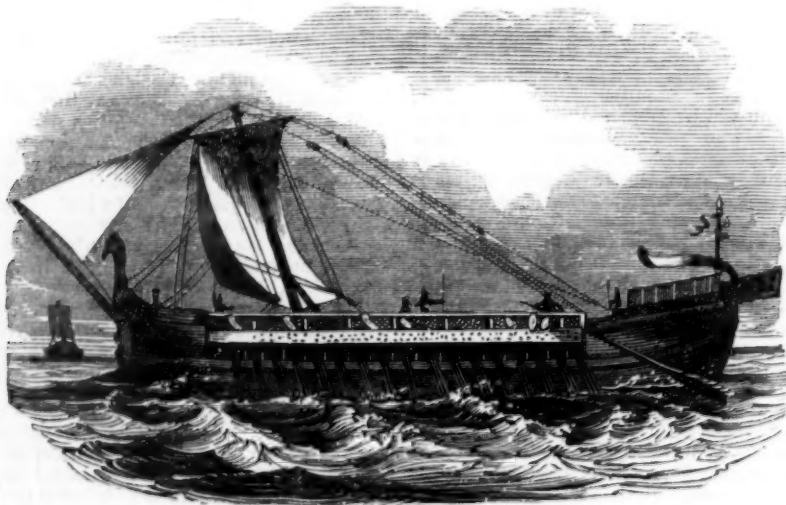
It is probable that some natural object, such as the wing of a bird, suggested the idea of the sail. By some it has been referred to the *nautilus*, or sailor-fish, which is seen in the Mediterranean Sea, the Indian Ocean, and the Polynesian waters of the Pacific. It is oftentimes observed in calm weather floating on the surface of the water, using its side-fins as oars, its hinder one for steering, while its dorsal-fin, which is formed from a peculiar membrane, serves as a sail. When wishing to go down all is drawn in, with a sufficient quantity of water to make it specifically heavier than its own bulk of water, it then sinks in an instant: when wishing to rise again it ejects the water. (See Vol. VI., p. 149.)

The material of which the sail was usually composed was linen, or it depended upon the particular produce of the country which despatched a sailing vessel from its shores. A sail was, perhaps, at first most readily formed by the mariner's suspending his clothes upon a pole. In some countries they used leather, or skins of animals, for sails, as Julius Cæsar observed the Gaulish Venetians to do. Thus Hercules is said to have sailed with the back of a lion, because he used no other sail than his garment, which was the skin of a lion. In other countries they used sails made from twisted flax or hemp, as the native West Indians are found, at the present time, to use in making a sail, a sort of silky grass, plaited to the length and breadth required.

We do not find more than one sail used in the earliest ages, or more than one mast; their vessels had not even a deck. The sails were commonly white, which colour was esteemed more lucky, though sometimes they were of other colours. The vessels were painted red and sometimes blue,

which latter colour was intended to correspond with the cerulean appearance of the sea, in climes where the blue sky overhangs the watery expanse, undimmed by clouds and vapour. When we read of the black ships of Homer, we must remember that they took this appearance from the pitch, with which they were externally covered to exclude the water. Sometimes other materials were used to produce the same effect, and hence a diversity in the colours of the ships. Such was the sort of vessels which conveyed the allied army to the plains of Troy. The size and number of the sails increased with the magnitude of the vessels and the length of their voyages, all which depended upon the importance of the nation, which, in the progress of time, by the searching spirit of commerce, or the desire of conquest, advanced the maritime arts.

The form and disposition of the sails in the vessel have been found to be different in different countries. We are told that, in ancient Egypt, the sail was suspended on two upright poles, so that it could be used only before the wind, as is the case with many of the South Sea Islanders, whose sails are made of matting. The sails of the New Zealanders and Polynesians are found to be of a triangular form, the former having the base upwards and the latter downwards; and, in a general view of the case, the condition of the savage state in our times will be found very much upon a par with that of early antiquity, at least as far as art and science are concerned, which consideration must be kept in view, if any question should arise in the reader's mind, as to why we seem to treat of the naval pursuits of modern barbarians in conjunction with those of the people who lived before the Christian era.



GALLEY, FROM A PAINTING AT HERCULANEUM.

#### THE RUDDER, ANCHOR, CABLES, SHIP'S NAME, &c.

BEFORE proceeding to consider the more perfect condition of ancient Navigation with reference to its effects, we shall present a brief view of some of its appendages in detail.

The rudder serves to regulate the course of the ship, as the tail of the fish guides the motions of its body. The principle is the same in both cases. When the rudder is in a right line with the central direction of the vessel, it is merely an enlargement of the keel. When drawn towards either side, it has to make way against a force of water, the resistance of which is in proportion to the angle formed by the rudder and the keel, and the rate of propulsion at which the vessel is urged along, or to the force of the surrounding current; so that the *stern* or hinder part of the vessel is forced aside out of its place by the resisting water, and the *proa*, or forepart, consequently, assumes an opposite direction, according with the movement of the rudder.

It seems that the original rudder was nothing more than one of the oars or paddles held sternwise by the person in the boat, which natural observation and practice taught him to steer the vessel by. This practice is even now far from obsolete. The ancient Greeks, we are told by Homer, used only one rudder; but as their vessels enlarged in size, they used two, one at the prow and the other at the stern: con-

nected therewith by fastenings, termed "*rudder-bands*," alluded to in Acts xxvii. 40; so that these were called *double-stern ships*, and could be propelled either way, without turning. Tacitus relates that the Germans used vessels of this sort. The use of the rudder-bands was to fasten the helm up out of the water, when the ship was left to drive, or take its own course; but, if they were loosened, as St. Luke relates, the rudder dipped into the water for use. We read of four rudders being employed, but nothing definite seems to be known of ships of this sort; nor of ships, which are mentioned as having two prows and two sterns.

It is a general feature in the maritime affairs of ancient nations, that their vessels in general could be conveniently carried overland, when so doing would tend to lessen distance; and for this purpose they were oftentimes so constructed; that they could be easily taken to pieces; as was often done, when they wished to pass over an isthmus. They were also drawn up out of the water, even for a single night. Hence, it is clear, that they were for a long time, at best, but sailing-boats; and that the anchor was not needed. The need or convenience of this grew with the size of the vessel. The Tuscans are said to have invented the anchor, while some ascribe it to Midas, whose anchor was long preserved in one of the temples of Jupiter. But, whatever means may have been originated by any party to

stay their vessels on the water, though the effect obtained was always the same, the instrument was various. The most ancient anchors were large stones, bored through the middle; sometimes they were made of wood, having lead inserted. In some places, baskets of stones, or sacks of sand, suspended by cords in the sea, served as anchors, by impeding the course of the ship by their weight. At length the anchor was made of iron, with one tooth, or fluke; and soon after two-fluked anchors became general. Sometimes they employed an anchor with four claws, or flukes; which seems to be what is meant in Acts xxvii. 29; although the ancients used more anchors than one, and usually dropped them by boats from the stern, contrary to the practice of the moderns, who let them down from the prow. The boat, being fastened to the stern, was usually towed along after the ship, unless in case of a heavy sea coming on, when it was drawn close up to the ship; as in Acts xxvii. 16. We learn from Bruce that the four-fluked anchor is still used by the Egyptians; and we should observe that St. Luke mentions that St. Paul was voyaging in an Egyptian vessel. Of the several anchors belonging to each ship, one exceeded the rest in size and strength. This was called the *sacred anchor*, and was used only in extreme danger; so that the phrase, *to throw out the sacred anchor*, was in process of time proverbially applied to those who were driven to their last shifts.

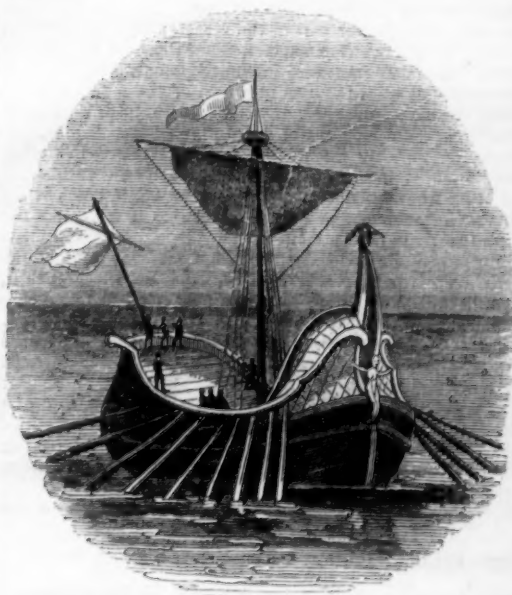
We find, upon one or two occasions, mention made of iron chains in use for dropping the anchor. Cables, however, were generally employed, made at first from leather thongs, or the sinews of animals. They then used flax, hemp, broom, rushes, or sea-weed. The ancient Greeks procured from Egypt ropes and cables manufactured from rushes and sea-willow. We must not omit to mention the ancient practice of *undergirding* the ship, mentioned in Acts xxvii. 17. By this is meant the passing of ropes several times round the hull, to prevent the timbers from starting and giving way, when the ship, in a very rough sea, is strained, and apt to lurch. It is even done now, upon occasion, when the vessel is not very large; as we find in Walter's account of Lord Anson's voyage, who relates the undergirding of a Spanish ship with six turns of a cable, during a violent storm.

It seems to have been the ordinary practice of the ancients, to place at the head or prow of the vessel an image, called the sign; which we see also in modern times. This gave then, and usually gives now, a notion of the ship's name. The sides of the prow were called *cheeks*, as this part of the vessel generally showed a human face, and was decorated with paint and gilding (see the engraving in page 35). The part of the vessel which cut the water, was called the *goose*; a great similarity being fancied to exist between the ship and this bird, while on the water. At the stern, often carved into the form of a shield, and elaborately painted, were small streamers. Here also was set, or in some way delineated, a representation of the deity to whose tutelary favour the ship was committed. To this deity daily prayer and sacrifice were offered, and this was the naval sanctuary. Taking this into consideration, and that ancient vessels were universally named after some beast, bird, or fish, we shall easily resolve many stories of antiquity, which contain facts under absurd and unnatural guises.

Ships were very usually termed *horses* among the ancients, which sets off in a clearer light the story of Neptune and Minerva contending for the honourable guardianship of the city of Athens. The horse, which the former gave, was a symbol of maritime affairs; as the olive, given by the latter, was of agricultural peace and quiet. Though the victory was at the time adjudged to Minerva, we read of her being an early patroness of Navigation. We are told that the poorer people of Gades, (now Cadiz,) a Phœnician colony in the south of Spain, called their small barks *horses*; and we know that the Nubian savages, at the present time, call a *sailing-boat* "a *water-mare*." About 1500 years a.c., the Princess Europa, we are told, was carried off from Phœnicia to Crete, by Jupiter, who had assumed the form of a bull: the credible version of which story is, that Asterius, King of Crete, whose wife she afterwards became, went to her father's court, prevailed upon her to elope with him, and conveyed her across the sea in a vessel having the sign of the bull at its head, and the shrine of Jupiter at its stern. The chariot with winged dragons, in which Medea fled from the vengeance of her husband, was only a ship with sails. The Elder Pliny tells us of a boy, who was carried by water some miles on the back of a dolphin to school; the vessel, in all probability, having a

dolphin at the prow. Arion, the famous musician of Lesbos, having made great wealth in foreign parts by his profession, was returning home by ship, when the sailors resolved to kill him and seize upon his riches. Playing once again, at his last request, a favourite tune, he leaped into the sea. A dolphin, attracted by the melody, received him safely on its back, and carried him again to the court of the prince, whence he had set out. Arion, doubtless, escaped by a boat, the fore part of which consisted of a dolphin. The flight of Phryxus with his sister Helle, into Asia, on the back of a ram having a golden fleece, and her falling through giddiness into that part of the sea afterwards named the *Hellespont*, or *Sea of Helle*, now the straits of the Dardanelles, is explained by considering that Phryxus absconded with an immense treasure in the ship *Aries* or *Ram*, and that his sister Helle, who accompanied him, fell overboard by some accident or other. The ship in which St. Paul sailed away from the island of Malta, had the twin sons of Leda for its sign. The Gemini were the patrons of mariners, and were deemed to be present with mortals, when a sacred light played around the tops of the masts. This light is now known by the people of the Mediterranean coasts, as St. Elmo's fire, and is due to electricity, which is attracted by points. Many of the signs of the Zodiac, and other constellations, received their names from the ships of early days, which the unaffected admiration of the times resolved to honour with immortal remembrance, by a belief in their translation to the skies.

The people of *Ægina*, an island in the *Ægean*, and of *Crete*, an island of the *Levant*, are among the earliest people, who pursued navigation. The inhabitants of *Corinth* and *Coreyra* were the first to form a fleet; but the *Cretans* are said to have been the first to possess the empire of the sea.



ANCIENT SHIP, SHOWING THE SIGN, OR IMAGE, AT THE PROW

#### WAR AND MERCHANT SHIPS.

THUS far respecting naval affairs in general. We must now observe that the vessels of the ancients were distinguished into two chief classes; each possessing its own characteristic features; *war ships*, and *ships of burden*. The former generally had no sails, but were impelled by oars, and were of great length; so that *long ships* was a term equivalent with *ships of war*. The latter were of a rounder shape, and were mainly propelled by sails.

The people most distinguished for naval warfare before the Christian era, were the Phœnicians, Carthaginians, Greeks, and Romans. One illustration of their war-ship and mode of fighting applies to all; as each one seems to have been tutored by its predecessor in political existence.

War-ships were chiefly rowed with oars, that they might be able to tack about, and approach the enemy at pleasure. The number and appointment of oars became more nume-

rous, as navigation improved. There were, according to the size of the vessel, rows, tiers, or banks of oars; not placed on the same level, but having the seats fixed at the back of each other in the manner of stairs. The most usual number of these rows was three, or four, or five. There were, however, many vessels, which had more tiers; and the ship's class was determined by this property. The first long ships were rowed, we are told, with fifty oars, in the thirteenth century B.C., and the notion of them was derived from Egypt. The size of this species of vessel, as depending upon the extent of the rowing-banks, became, we read, after many ages, enormous.

In the reign of Ptolemy Philopater, King of Egypt, about 200 years B.C., a ship of forty tiers of oars was constructed, each tier containing one hundred rowers. This ship carried, moreover, its complement of sailors and soldiers, and was called the *Isis*. A still more wonderful vessel was constructed about the same time by Archimedes; at the command of Hiero, King of Sicily. This ship had in it banqueting-rooms, galleries, stables, baths, and fish-ponds; it had also a temple of Venus, the floors and sides of which were painted with scenes from the *Iliad* of Homer. There seems to have been a rage at this time for constructing these huge machines, which the deficient nautical skill of the times could not apply to any useful purpose. They resembled floating islands, and, indeed, we are told that these, and such like fabrics, were too unwieldy for use, and served merely for show and ostentation. In a word, if there be no exaggeration, which is much suspected, and we be under no misapprehension, which is much feared, respecting these accounts, they serve, at least, to show that human nature often impotently attempts to outdo itself. The most usual size for vessels, in the more perfect condition of ancient navigation, allowed five tiers of oars, holding three hundred rowers, above whom were two hundred fighting men. The oars of those who were at the lower part of the vessel, and, consequently, nearer the water, were shorter than those of the rowers above, whose oars increased in length proportionally as they ascended. We are not well informed of the manner of applying the oars from so many tiers as we have here mentioned, or even more; and how the mechanical force, necessary for working the upper and longest oars, was effectively brought into play, but such we see on several coins and other fragments of antiquity. Two large holes at the prow of a vessel, occasionally used for oars, were called the *ship's eyes*. It has been noticed by voyagers, that in the fishing-boats of the Society Islands, these eyes are made of shells. To bear up into the wind, Acts xxvii. 15, means, when literally translated, to present its eyes to the wind,—in modern nautical language, to loof up against the wind.

Ships of war had at the prow a wooden projection, covered with brass, termed a *beak*; the use of which was to dash violently against an enemy's vessel, and sink or shatter it. Pieces of wood, placed on each side of the prow of a vessel, to ward off or counteract the force of the enemy's beak, were termed the *ship's ears*. The Romans, having defeated the Carthaginians in several naval encounters, carried home as prizes the beaks of the enemy's ships which they had captured. These they hung up in the Forum, about the tribunal from whence the public orators harangued the citizens. This pulpit was, therefore, called the *rostrum*, which is the Latin for *beak*. Hence, a person about to speak publicly, is said to mount the *rostrum*.

Over these vessels were certain raised platforms; at their sides were projecting stages, and on their forecastles were towers, on which the soldiers stood and levelled their missile weapons with greater force and certainty against the enemy: whereas the rowers, by their position in the hull of the vessel, were always secure from damage. Sometimes an attempt was made to sink the enemy by discharging a heavy weight of stone or lead into his ship. In the case of a siege on the sea-side, ships were connected together, along the circuit of water surrounding the walls; on which ships high towers were erected at intervals, to enable the besiegers to annoy the townsmen, and perchance to scale the walls, (see p. 40.) The besieged would, by means of a long lever, invented by Archimedes, lift the invading ships up out of the water; and suddenly letting them go, dash them to pieces. Towers made so as to be quickly raised, or let down, were used also in general naval engagements. Many ships had coverings of hides or skins, to protect all who were in the vessel from the darts of the enemy. The shields of the soldiers were usually hung upon the railing (see p. 40) which begirt the ship, and above which the stages appeared.

In the event of an engagement, everything was put out of the vessel which would not be wanted in battle. If the ship had sails, they were furled and put away; and it is to be observed that the ancients always avoided fighting in stormy weather. The order of battle was generally that of a half-moon, the best men and ships being stationed at the horns, or wings, for the purpose of breaking the enemy's line by beaking. Sometimes the semi-circle was directed *convexly* towards the enemy; at other times *concavely*. Upon some occasions the fleet was drawn up in a circle, as with the Peloponnesians; at others, in the form of the letter V, for the purpose of penetrating the body of the adverse squadron.

Prayer and sacrifice preceded the battle, accompanied with the exhortations of the admiral. The signal for engaging was given by sound of trumpet, which was repeated round the fleet, as also by hanging out a gilded shield, or banner, from the admiral's galley; which vessel was moreover distinguished by a red flag. The battle continued as long as the shield, or banner, was elevated. A psalm, or war-song, to Mars was chaunted by the party which made the attack; and a hymn to Apollo was sung by the victors.

The admiral's galley would begin the engagement by endeavouring by a sudden, close, and parallel movement, to break, or sweep off, the whole set of oars on one side of a hostile vessel, which would thereby be disabled from performing any further manœuvres; or they might seek to disorder the enemy's line by attacks with the beaked prow, while the soldiers assailed their rivals with slings and darts, and eventually with swords and spears. In fact, the latter part of the battle would more nearly resemble a land-fight; for, when the ships came to close quarters, one party or the other would throw out iron grapnels, by which the vessels were locked together, and the weaker prevented from escape. This plan was usually resorted to by the party which was the inferior of the two in naval tactics. We find boarding-pikes mentioned by Homer as being used in naval encounters.

To enter more into detail of this sort would lead us insensibly from our subject. We may remark, however, that if the country which a fleet was sailing to, was hostile, or if there was no good harbour, they would draw their ships on land and form a naval camp.

The naval business of Athens had very great reference to war; but as conquest and the extension of dominion was the sole object proposed by the Romans in their assumption of naval tactics, all the proper business of navigation, from the master to the rower, was allowed to lie in the hands of slaves, or of the lowest classes. Hence the Romans make no figure in maritime history.



BEAKS AND EYES OF THE SHIP



We have now to make a few remarks on the trading-vessels of the ancients; premising that, in natural order, this should have come first: as marine vessels originated in the necessity for transport, either of person or goods. Piracy, or robbery by sea, deemed to be an honourable employment in the infancy of a nation, was excited and encouraged by the convenience thus afforded; and then followed naval war.

The oval form of the merchant ship is, of course, to be referred to the accommodation of passengers, and the stowing away of baggage. It seems to have been flat-floored, broad, and of small draught of water, not very dissimilar to the Chinese junk seen in our day, which is thought by the best reasoning to be only a counterpart of the ancient ship of commerce. The length of the trading vessel was four times its breadth, while the war galley was eight times longer than broad. As the war ship, which had a mast, was distinguished by a helmet thereupon, and a banner at its bow, so a basket, emblematic of its nature, was suspended from the mast of the trading vessel.

The common burden of their best and largest trading-vessels seems to have been fifty or sixty tons, though much larger ones are alluded to; to the accounts of which there is attached the same uncertainty as we previously spoke of in the case of the rowing-galleys. An obelisk of fifteen hundred tons' weight was brought from Egypt to Rome, and placed in the Circus by Constantius, where it now stands. The same vessel carried, we are told, more than eleven hundred tons of pulse, placed at one end of the ship to balance the stone at the other. Such vessels as these, called *Ætnas*, or moving mountains, were not valued for ordinary use, being too cumbersome and unmanageable. Merchant-vessels having to pass from one country to another, were chiefly governed by sails, as mere transports were towed along the banks of rivers by cords.

We are not well informed what convenience the ancient mariners had for sleeping in their ships. Berths, for the convenience of passengers on board the foreign trading-ships, seem to have been made at the sides of the vessel, as with us; see *Jonah* i. 6: but we infer that the resting-places of the sailors themselves were of a chance-like nature, and no wonder that it should be so, as ancient navigation did not permit vessels to be long out at sea, or far from land. *Ulysses*, we read in *Homer*, slept on skins at the stern, and the rowers who, in the course of time, were selected from slaves or malefactors, reposed upon the benches where they had toiled. Any superior accommodation seemed likely to deteriorate the hardihood of the sailor; and *Alcibiades* the Athenian commander, *Plutarch* tells us, was censured for having on board a bed hung upon cords!

#### AN ANCIENT VOYAGE.

HAVING hitherto confined ourselves, in great measure, to the vessel and its detail, we pass on to the consideration of the ship, or fleet of ships, when making way over the waters; so that the observations which we shall here make will not relate to any particular order of shipping, unless so far as shall be specified at the time.

The invariable time for sailing was that of Summer, when the heavens were genial, and the light of day exceeded the darkness of night; the means and experience of the ancient mariners did not permit it to be otherwise. Even with a smooth sea and fair wind, they could not for ages venture out of sight of the land, lest, in the apparently interminable waste of waters, they might be drifted about for ever: their voyages, therefore, to which they were tempted by trade and commerce, were a continual coasting; and vessels were, in certain circumstances, even towed along: being also often necessitated to land for provisions, they would not be long at a time out at sea, a thing which even the superstition of the sailors would have forbidden. Superstitious fears seem to have haunted sailors from the earliest to the present time; but these are, we trust, fast fading before the cheering light of the Divine Word.

It was an article of belief among the ancients, that a soul which had departed from a body unhonoured with the rites of sepulture, was condemned to wander in sorrow for a hundred years on the banks of the infernal river *Styx*, ere it could be admitted to a resting-place of bliss; being, therefore, in their landskirt voyages, at the mercy of the people of the coast, and impatient at the close confinement and restriction of the ship, having also their religious dread of the unfathomable and heaving deep, we need not be surprised that ages upon ages should pass away, and the

shores of the Mediterranean, the first civilized portion of the West, be still the limits within which the naval art was practised.

When a voyage was contemplated, the ships, which had in all probability been hauled up on dry land, were pushed into the sea by the shoulders of the mariners, or by levers; or latterly, by means of a rolling-machine called a *helix*, invented by *Archimedes*, about 200 years B.C.

A fleet, or number of ships, being, therefore, about to set sail, every proceeding connected therewith became matter of religious parade and solemnity. Sacrifices having been performed, and each ship committed to the care of some deity, omens and prognostics were observed, and the trivial nature of some of them is such as to create a smile. The perching of a swallow on the mast, or the sneezing of any person to the left, would so perturb the minds of these enterprising sailors, as to delay the departure till the following day. When, however, nothing had occurred to mar the resolution of the voyagers, the ships were unmoored, and departed with oars or sails, or, perhaps, both, decked with flowers and garlands, and attended with prayers to *Neptune* and the other gods, from the voyagers and their friends remaining at home. When they had got a little out to sea, doves were let loose from the ships, which flying back to land, were hailed as omens of the safe return of the crew. The ship of the commander usually sailed on foremost, conspicuous for its gaudy ornaments: the others followed in order, and, when fairly out at sea, sailed three or more abreast, or alongside of each other, unless the weather grew rough and the sea unsteady; in which case they would keep off from one another, in order that the manœuvres of each vessel might not be hindered. Excepting under very favourable circumstances, they did not continue sailing through the night, but anchored in some cove or sheltered spot; or they drew up their ships on the beach, that all in the vessel might repose until the returning dawn. If they actually got out of sight of land, it was with the view of directing their course towards some headland, which they knew to lie in a certain direction.

In the progress of ages, as the knowledge of astronomy advanced, and various observations of the heavenly bodies were made and collected, the situations and bearings of places were, by these means, naturally attempted to be surmised. To navigate safely, and to trust oneself with confidence upon the pathless ocean, it is necessary to have always ready at hand, a safe and uninterrupted guide to the relative situations of places. Though it appears that the general principles of the loadstone were well known many ages before the Christian era, yet the polarity of a suspended needle was never dreamed of among the active nations on the western side of the ancient hemisphere, until within the last five hundred years. The early missionaries to China found that the compass had long been in use in that country\*; but that curious people seem to have been the first to attain, in ancient times, a certain point of civilization, beyond which they have never since advanced. So that the ancient sailor, who had the greatest skill and means which his art afforded, could look only to the heavens for assistance; and they, oftentimes, in the midst of his greatest difficulties, were obscured. To navigate in such circumstances would be similar to walking with the eyes shut; it was natural for him, therefore, to cling to the coast, and scarcely venture off from the earth by night. But, after awhile, in addition to the motions of the sun and moon, it had been observed that certain stars towards the north never sunk below the horizon, but seemed to move continually round a definite point. The ancient Greeks noticed the constant revolution of the seven conspicuous stars, forming the hinder part of the Great Bear; but it appears that the commercial Phœnicians had already more closely tracked up the northern point of the sky by directing their attention to a set of stars, which kept on revolving in smaller circles than those observed by the Greeks. This was the constellation called the Little Bear; at the tip of the tail of which animal is situated a star, now called the Pole Star. This is the nearest plainly visible star to that point which is in a line with the pole of the earth, infinitely extended northward. When the use of these observations had been made familiar by practice, the nautical art advanced considerably, and various schemes of enterprise were formed, and effected with more or less success.

It has been well observed that it is a distinctive feature

\* See *Saturday Magazine*, Vol. III., p. 116.

in modern Navigation, as compared with that of the ancients that the method of conducting a ship now from place to place, as depending upon definite and distinct rules, is much more safe and simple, and requires, perhaps, less training and study, while it effects much more than the method of the ancients. The naval officers particularly offering themselves to our notice by their official variation from the moderns, are the master of the rowers, and the pilot. It was the business of the former to attend to the rowing department of the vessel, to assign their places to the rowers, to encourage them in their labours, and to keep time to the motion of the oars, by the strokes of his mallet, or the musical intonations of his voice. The other officer, who especially claims our attention, is the pilot, or master of the ship; to whom belonged the duty of navigating the vessel, and who was consequently responsible for the safety of the ship, and all on board. His place was at the stern; and to excel in his vocation, he had to possess an exact knowledge of his art, which consisted chiefly in skill in steering, in managing the sails, and in the use of other nautical appurtenances, together with a knowledge and experience of the winds, of the heavenly bodies, as indicating the seasons, portending the weather, and directing the course of the ship, and of the site of commodious ports and harbours; when rocks and quicksands were to be dreaded, and how they might be avoided. The ancients retired into harbour when they saw the Winter signs begin to rise; where they remained till the constellations of Spring invited them upon the waters. It was not usual, therefore, for them to prosecute their voyages long after the Autumnal Equinox. The gales which then prevailed in the Mediterranean, formerly called Euroclydons\*, or Tuffoones†, but now *Levanders*, or *Michaelmas flows*, being hazardous to shipping, made them lie by for the Winter. The necessity of this is alluded to in Acts xxvii. 9. The Jewish fast of expiation, which is there meant, was on the 25th of September. It was also necessary for the pilot to understand and explain the signs and prognostics which offered themselves from the sea-birds, the fishes, the surge, the billows dashing upon the shore, and the waving of the woods on the impending heights. A seaman, unapt in the solution of any novelty of this sort, could not attain to the reputation of a good pilot.

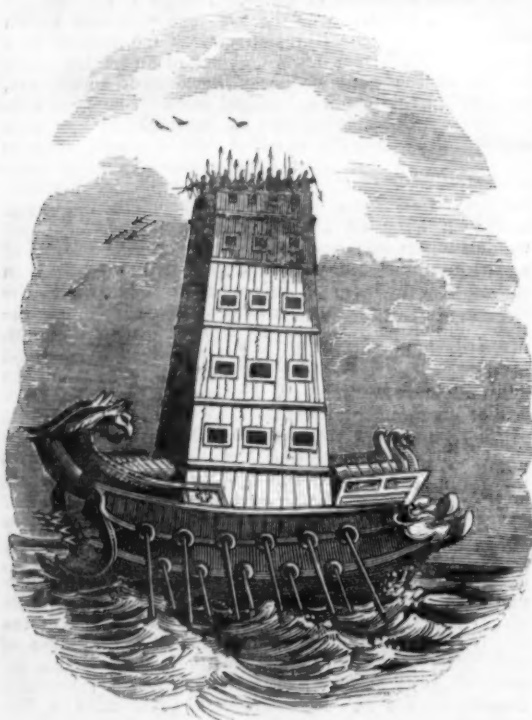
It was also expected that this personage should have procured an ample supply of favourable winds; as the Lap-

lander captain of our times buys of the wise women a quantity of this necessary material for navigation. We are told that Ulysses, having procured a bag of wind, was returning home to Ithaca with a prosperous sail. When his native isle was just in sight, and the hero had fallen asleep through fatigue, the bag was opened by the sailors, who suspected that treasure was concealed in it: whereupon the winds rushed forth with awful violence, and drove the ship backward a distance of ten days' sail.

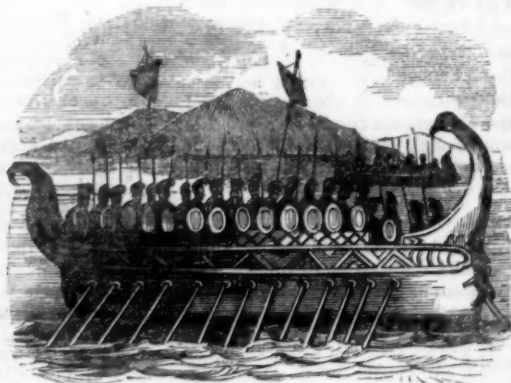
At the termination of a voyage, the vessels were usually stranded by urging them stern foremost towards the land, when the crews drew them up out of the water by main force.

The notion of light-houses seems to have been generally adopted about the time of the Christian era from the Egyptians. The small island of Pharos, in the bay of Alexandria, had been joined to the continent by a causeway of a mile in length, about 284 B.C. At the extremity of this mole was built a white marble tower, at the top of which a fire was kept constantly burning, visible, we are told, at the distance of one hundred miles; but this would make it to have been somewhat more than a mile in height from the surface of the earth, unless, indeed, it were visible from some eminence a hundred miles distant. This part of the account seems apocryphal, and even the site of the celebrated Pharos is a matter of dispute. The pride of man has doubtlessly exaggerated the facts of many ancient narratives; and from this, perhaps, as well as from many other classical stories, we must make considerable deduction: but, at any rate, we have accounts of various erections of this nature, and they seem at the later period of ancient navigation to have been not uncommon, when ample experience had made nocturnal sailing less formidable. We find them accordingly erected at most of the harbours and naval stations which ships frequented; places where nature had been assisted by art, and where the larger-sized ships rode at anchor, secure from the swell of the seas around.

The ancients generally, as well as the barbarians of modern times, carried their idols with them on a voyage, thinking thereby to ensure the safety of the ship. Vows, therefore, which had been made previously to, or during the voyage, were now discharged, and especially was due reverence paid to Neptune, whose peculiar dominion they had just safely left. Those who had landed in safety after a storm, or any other of the manifold hazards of a sea-voyage, hung up in one of the numerous temples surrounding the port, a picture of their disaster, together with the garments in which they had escaped it. This, with a multitude of other Pagan customs, has been exploded by time in most of the countries of the world; but we learn that this act of piety is still practised on the coasts of the Mediterranean, where the people profess the Roman Catholic faith. Happy would it have been for the human race, if no heathen custom more questionable than this, had received the sanction of the teachers of Christianity in the ages succeeding the times of the Apostles!



ANCIENT FLOATING TOWER.



ANCIENT ROMAN WAR GALLEY.

\* A billow-excited east wind.

† A whirlwind.

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